

# **Proposed Amended Rule 1469 – Hexavalent Chromium Emissions from Chromium Electroplating and Chromic Acid Anodizing Operations**

Public Workshop  
South Coast Air Quality Management District  
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# Hexavalent Chromium

- Hexavalent chromium was identified as a carcinogenic toxic air contaminant in 1986 by the California Air Resources Board
- Can occur as an aerosol or particulate matter in the air
- Exposure to hexavalent chromium can cause both cancer and non-cancer health effects
  - Inhalation over a long period time increases risk of lung and nasal cancer
  - Non-cancer effects include irritation of nose, throat and lungs including nasal sores and perforation of the membrane separating the nostrils



# Background – Rule 1469

- Rule 1469 applies to facilities that conduct chromium electroplating or chromic acid anodizing operations
- These electrolytic processes plate or anodize parts by submerging in a tank containing chromic acid, a form of hexavalent chromium
- The electrolytic process creates bubbles entrained with chromic acid that can burst and generate hexavalent chromium emissions
- Rule 1469 currently requires controls, housekeeping, and best management practices for chromium electroplating and chromic acid anodizing tanks



# Other Hexavalent Chromium-Containing Tanks

- Other tanks used in the chromium electroplating and chromic acid anodizing process, such as heated dichromate seal tanks and reverse plating tanks, are known to contain hexavalent chromium
- Hexavalent chromium emissions can be generated from these tanks depending on the hexavalent chromium concentration in the bath and the operating conditions of these tanks – air sparged, electrolytic, or heated
- These other hexavalent chromium-containing tanks are currently not regulated under Rule 1469 and are typically not vented to air pollution controls



# Fugitive Hexavalent Chromium Emissions

- Based on ambient monitoring near several Rule 1469 facilities, sampling, and emissions testing, these other hexavalent chromium-containing tanks have been determined to be sources of hexavalent chromium emissions
- Elevated ambient hexavalent chromium levels near some Rule 1469 facilities were also attributed to cross-draft conditions, allowing hexavalent chromium emissions to flow outside the buildings
- Hexavalent chromium emissions were substantially reduced after operators closed building openings where these tanks were located
- Based on site visits conducted by SCAQMD staff, building cross-draft conditions exist at many Rule 1469 facilities

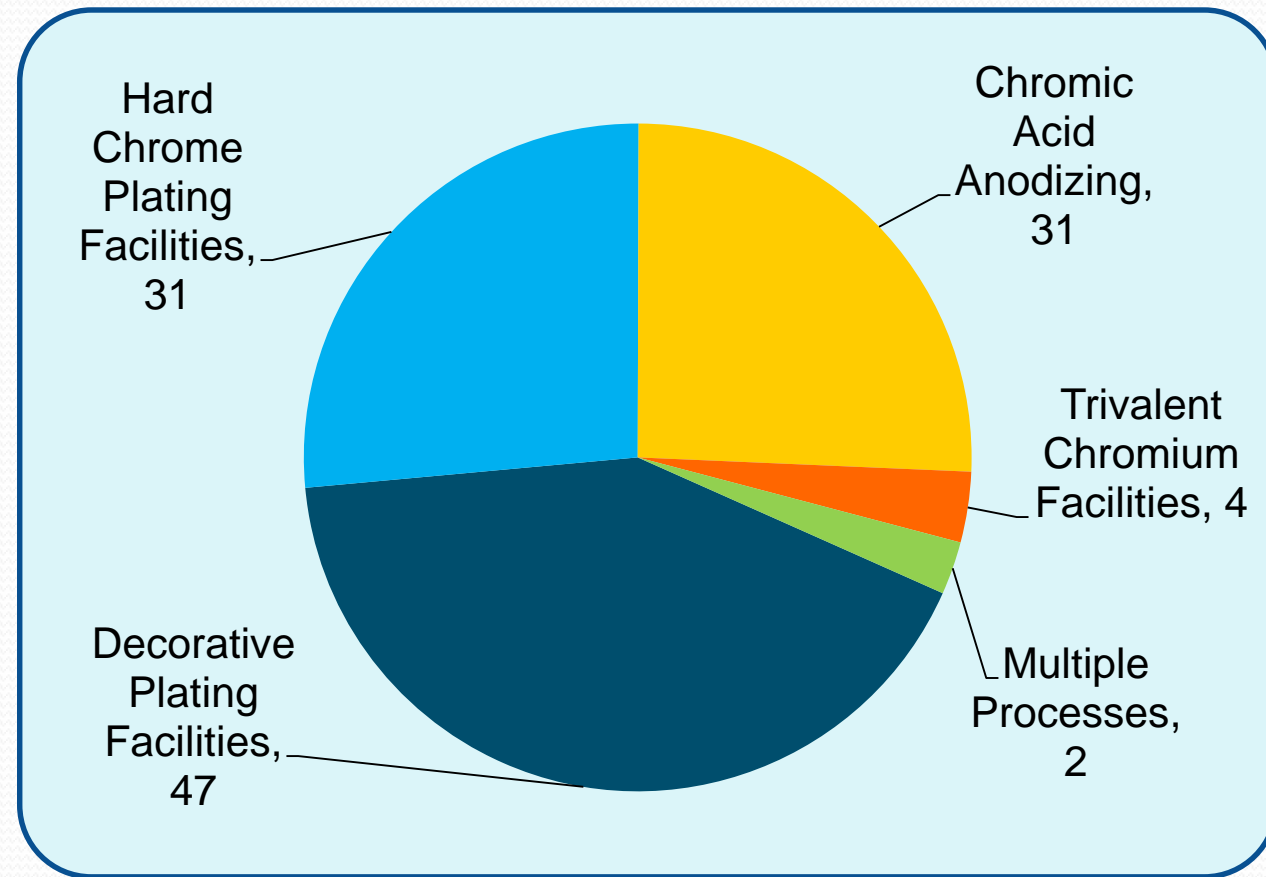
A vertical photograph on the left side of the slide shows an industrial facility. In the foreground, there is a long, narrow metal grate walkway. To the left of the walkway, there are several large, dark-colored tanks or containers. In the background, there are more industrial structures, including what looks like a large window or opening in a building, and some equipment hanging from the ceiling.

# Need for Proposed Amended Rule (PAR) 1469

- PAR 1469 is needed to establish requirements for hexavalent chromium-containing tanks currently unregulated by the rule
- PAR 1469 also seeks to establish:
  - Requirements for building enclosures
  - Enhanced housekeeping and best management practices
  - Periodic source testing and parameter monitoring of air pollution controls
  - Conditional requirements for permanent total enclosures vented to negative air
  - Revised chemical fume suppressant certification process
- Other amendments proposed for consistency with federal chrome plating regulation relating to prohibition of perfluorooctane sulfonate (PFOS) containing fume suppressants and surface tension requirements

# Purpose and Applicability

- Purpose is to reduce hexavalent chromium emissions from facilities that perform chromium electroplating or chromic acid anodizing, and other associated activities
- 115 chromium electroplating and chromic acid anodizing facilities have been identified
  - Based on SCAQMD permitting and compliance data, internet searches, and industry provided lists



# New and Amended Definitions

- ADD-ON AIR POLLUTION CONTROL DEVICE (modified)
- AIR POLLUTION CONTROL TECHNIQUE (modified)
- APPROVED CLEANING METHOD (added)
- BARRIER (added)
- BREAKDOWN (removed)
- BUILDING ENCLOSURE (added)
- CHROMIUM ELECTROPLATING OR CHROMIC ACID ANODIZING KIT (added)
- EARLY EDUCATION CENTER (added)
- ENCLOSURE OPENING (added)
- FREEBOARD HEIGHT (added)
- FUGITIVE EMISSIONS (modified)
- HIGH EFFICIENCY PARTICULATE ARRESTORS (HEPA) (modified)
- HIGH EFFICIENCY PARTICULATE ARRESTORS (HEPA) VACUUM (added)
- LOW PRESSURE SPRAY NOZZLE (added)
- MECHANICAL FUME SUPPRESSANT (modified)
- ADD-ON NON-VENTILATED AIR POLLUTION CONTROL DEVICE (added)
- PERFLUROOCTANE SULFONIC ACID (PFOS) BASED FUME SUPPRESSANT (added)
- PERMANENT TOTAL ENCLOSURE (added)
- STALAGMOMETER (modified)
- TANK PROCESS AREA (added)
- TENSIMETER (modified)
- TIER I HEXAVALENT CHROMIUM-CONTAINING TANK (added)
- TIER II HEXAVALENT CHROMIUM-CONTAINING TANK (added)



# Definition of Tier I and Tier II Hexavalent Chromium-Containing Tanks

## **Tier I Hexavalent Chromium-Containing Tank**

- Hexavalent chromium concentration  $\geq 1,000$  parts per million (ppm)

## **Tier II Hexavalent Chromium-Containing Tank**

Tank Condition	Hexavalent Chromium Concentration
Operating temperature between 140-150°F	>1,500 PPM
Operating temperature between 150-160°F	>500 PPM
Operating temperature greater than 160°F	>100 PPM
Electrolytic or Air Sparged	>1,000 PPM

# Key Requirements for Tier I and Tier II Hexavalent Chromium-Containing Tanks

## Tier I



- Housekeeping Requirements
- Best Management Practices
- Building Enclosure Requirements

## Tier II



- Housekeeping Requirements
- Best Management Practices
- Building Enclosure Requirements
- Pollution Control Requirements
- Source Testing Provisions
- Conditional Provisions for Building Enclosure with Negative Air

# Controls and Emission Standards

- Tier II Tanks must be vented to an add-on air pollution control device that meets:

Exhaust Flow Rate	Controlled Tier II Tanks In a Permanent Total Enclosure?	Applicable Square Footage to Determine Emission Rate	Emission Rate
≤ 5,000 CFM	Not Applicable	Not Applicable	0.20 mg/hr
> 5,000 CFM	No	Controlled Tier II tanks	0.004 mg/hr-ft <sup>2</sup>
> 5,000 CFM	Yes	Controlled Tier II tanks and tanks requiring controls by a SCAQMD Permit	0.004 mg/hr-ft <sup>2</sup>

- Operator can control tank through a SCAQMD-approved alternative method based on rule-specified criteria
- No changes to limits for chromium electroplating and chromic acid anodizing tanks

# Permit Application Submittal Dates for Controls on Tier II Tanks

- For Tier II Tanks existing prior to date of rule adoption, the owner or operator must submit permit applications for control equipment as follows:

Electrolytic Process at the Facility	Compliance Date for Permit Application Submittal
Tier II Tank(s) at Chromic Acid Anodizing Facilities	180 days after Rule Adoption
Tier II Tank(s) at Hard Chromium Electroplating Facilities	270 days after Rule Adoption
Tier II Tank(s) at Decorative Chromium Electroplating Facilities	365 days after Rule Adoption

- Installation required no later than 1 year after Permit to Construct is issued
- Interim requirements for tank covers until controls are installed
- Staff will be modifying permit application submittal dates to be spaced 180 days apart



# Freeboard Height

- Proposed requirement to maintain a tank freeboard height between 6-8 inches for any new or modified Tier II Tank
  - Tank freeboard is the space between the bath surface level and lip of tank
  - Height of 6"-8" inches is recommended in *Industrial Ventilation, A Manual of Recommended Practice for Design*, published by the American Conference of Governmental Industrial Hygienists
  - Current SCAQMD practice for permitting new tanks requires this freeboard height
- Modification for this requirement defined as a physical change to the dimensions of the tank

# Building Enclosures

- Proposed requirement for all Tier I and Tier II Tanks to be located within a building enclosure
- Total of all openings in a building enclosure shall not exceed 3% of the building enclosure envelope
  - Envelope calculated as the total surface of the building enclosure's exterior walls, floor and horizontal projection of the roof on the ground
  - Based on EPA's Method 204 which allows 5% for Permanent Total Enclosures with negative air
  - PAR 1469 requires 3% since it does not require negative air
- Staff will be modifying provision to allow 5% openings if the building meets EPA Method 204 which requires negative air and the building is vented to pollution controls



# Other Requirements for Building Enclosures

- Ensure that any building enclosure opening that is on opposite ends of the building enclosure where air movement can pass through are not simultaneously open except during the passage of vehicles, equipment or people by closing or using one or more of the following methods:
  - Automated roll-up door;
  - Overlapping plastic strip curtain;
  - Vestibule;
  - Airlock system; or
  - Alternative methods approved by the Executive Officer



# Other Requirements for Building Enclosures (continued)

- Close all roof openings located within 15 feet above the edge of any Tier II Tank except openings that:
  - Allow access of equipment or parts; or
  - Provide intake air that does not impact air pollution control equipment
- Prohibit operation of devices in any roof opening that pulls air from the building enclosure to the outdoor air unless vented to HEPA
- Close any building enclosure opening or use a method to restrict air movement that directly faces and opens toward a sensitive receptor within 100 feet
- Monthly inspections of building enclosures for breaks or other deterioration that could or results in fugitive dust
- Alternative compliance measures if facility cannot comply with PAR 1469 due to OSHA requirements for worker safety





# Proposed Housekeeping Requirements

- Increase from weekly to daily cleaning of surfaces within the enclosed storage area, open floor area, walkways around Tier I and II Tanks, or any surface potentially contaminated with hexavalent chromium
- Keep containers containing chromium-containing waste material closed except when being filled or emptied
- Clean floors within 20 feet of a buffing, grinding, or polishing workstation and any entrance/exit point of a building enclosure within 1 hour of the end of the last operating shift for when buffing, grinding, or polishing was conducted
- Eliminate flooring made of fabric (e.g., rugs, carpet) on walkways in the tank process area

# Proposed Best Management Practices

- Dragout provisions modified to incorporate Tier I and Tier II Tanks (previously only applied to plating and anodizing tanks)
  - Facilities with automated lines: Install drip trays, or other containment methods, between Tier I and II Tanks such that liquid containing chromium does not fall through space between
  - Facilities without automated lines: Handle parts so that liquid containing chromium is not dripped outside of a Tier I or II Tank, unless liquid is captured by a drip tray or other containment device



# Proposed Best Management Practices (continued)

- Spray rinsing of parts
  - Operator shall not spray rinse parts or equipment that have chromium-containing liquid unless the parts or equipment are fully lowered inside a tank where all liquid is captured inside the tank
  - Operator can alternatively ensure that chromium-containing liquid is captured and returned to the tank when rinsing above a tank by:
    - Installing splash guards at the tank that is free of holes, tears, and gaps that is cleaned at least daily; or
    - For tanks located within a process line utilizing an overhead crane system restricting installation splash guards, use a low pressure spray nozzle such that water flows off of the part or equipment and into the tank

# Proposed Best Management Practices

(continued)

- Maintain clear labeling of each tank within the tank process area indicating:
  - Tank number or other identifier
  - SCAQMD permit number
  - Bath contents
  - Maximum hexavalent chromium concentration (ppm)
  - Operating temperature range; and
  - Agitation methods used
- Maintain visible indicator of freeboard height for applicable Tier I and II Tanks
- Conduct all buffing, grinding, and polishing within a building enclosure
- Prohibit compressed air cleaning or drying operations within 15 feet of all Tier I or II Tanks unless a barrier separates those areas from the compressed air cleaning or drying operation; or is conducted in a permanent total enclosure



# Source Testing Requirements

- Periodic source testing – once at least every 36 months (previously only tested once)
  - Allow use of “emission screening” test for initial source test if the owner or operator conducted a source test after January 1, 2009
- Source test protocol for initial source test to be submitted based on facility permitted annual ampere-hour limit
- Initial source test to be conducted no later than 120 days after approval of the initial source test protocol
- After initial source test, facility may conduct “emissions screening” test in lieu of full source test that:
  - Follows source test protocol previously approved by SCAQMD; and
  - Consists of one run to evaluate capture and control; and
  - Is representative of operating conditions at the facility
- Failure of emissions screening test requires conducting full source test

# Additional Requirements for Capture Efficiency of Control Equipment

- Measurement velocities of all collection slots and the pressure of the push air manifold, or at alternate locations based on the most recent SCAQMD-approved source test
  - Conducted at least once every 180 days; in conjunction with existing smoke test requirement
  - Ensures continuous compliance with the capture efficiency of the add-on air pollution control device
- Repairable measurements specified by the rule requires operators to repair or replace, and re-measure within 3 calendar days
- Failing measurements specified by the rule requires immediate shutdown of tanks associated with control equipment

# Chemical Fume Suppressants and Surface Tension Requirements

- For consistency with the federal NESHAP for Chromium Electroplating, PAR 1469 requires that:
  - PFOS-containing chemical fume suppressant cannot be added to any chromium electroplating or chromic acid anodizing bath
  - Required surface tension values decreased to 40 dynes/cm and 33 dynes/cm, for stalagmometer and tensiometer measurements, respectively
- PAR 1469 modifies monitoring of bath surface tensions from weekly to once every third operating day
  - Staff concern that non-PFOS based fume suppressants degrade faster than those containing PFOS

# OEHHA Toxicity Review of non-PFOS Chemical Fume Suppressants

- Since September 2016, CARB and SCAQMD have certified 4 non-PFOS fume suppressants which are currently in use at many facilities
- OEHHA conducted toxicity reviews of these fume suppressants showing the potential to produce adverse impacts in children
  - Limited health data on non-PFOS fume suppressants
  - No exposure data on emissions of non-PFOS fume suppressants
- Some smaller facilities use fume suppressants as sole form of control; ban on fume suppressants would have significant cost impacts:
  - Installation and operation of add-on air pollution controls
  - Discontinue plating/anodizing operations or use other chemical, if possible
- SCAQMD is proceeding with caution this issue; more data needed to determine the exposure potential of fume suppressants
- PAR 1469 includes a provision for a revised certification process of fume suppressants



# Revised Certification Process of Wetting Agent Chemical Suppressants

- Enhanced certification process will be conducted by SCAQMD and CARB
- By July 1, 2020, the Executive Officer shall notify the owner or operator the following information:
  - The availability of wetting agent chemical fume suppressants by July 1, 2022
  - The certification status of any potential wetting agent chemical fume suppressants
- Beginning July 1, 2022, the owner or operator shall only add a wetting agent chemical fume suppressant to a Tier II Tank that meets the requirements of (I)(1)

# Certification of Wetting Agent Chemical Fume Suppressants (continued)

- If the notification indicates that no chemical fume suppressants available by July 1, 2022, the owner or operator shall install and implement an air pollution control technique no later than July 1, 2022
- Owner or operator may submit a written commitment by January 1, 2021 to:
  - Phase out the use of hexavalent chromium by July 1, 2023 in electroplating or chromic acid anodizing tanks that use a wetting agent chemical fume suppressant
  - Continue use a wetting agent chemical suppressant certified pursuant to paragraph (l)(1) until July 1, 2023
- Owner or operator that fails to phase out the use of hexavalent chromium by July 1, 2023, will be required to cease operation of electroplating or chromic acid anodizing tank

# Parameter Monitoring

- Requirements for pressure drop ranges modified so that ranges are established during the permitting process
- Additional requirements for the monitoring device for pressure drops across HEPA filters
- New requirements for the installation and maintenance of mechanical gauges to measure and meet pressures and flows at:
  - Push manifold;
  - Collection manifold or any location within the system to measure flow rate; and
  - Across each stage of the control device

# Recordkeeping and Reporting

- Additional recordkeeping and reporting requirements for newly added or modified proposed requirements
- New Requirement for “Notification of Incidents” that requires operator to notify the Executive Officer by calling 1-800-CUT-SMOG within one hour of:
  - Any failed smoke test or source test;
  - An exceedance of a permitted ampere-hour limit; or
  - A malfunction of a non-resettable ampere-hour meter
- Notification to be followed up with a report to the Executive Officer

# Conditional Requirements for Permanent Total Enclosures

- Facility required to install a Permanent Total Enclosure (vented to add-on air pollution controls) for a Tier II Tank if:
  - More than one incident of conducting a non-passing source test within a 48-month period; or
  - More than one incident of failing to cease operation of an electroplating or anodizing line associated with a failed measurement of the collection system of an add-on air pollution control device, or a failed smoke test within a 48-month period
- PAR 1469 includes provision for facility to provide evidence that the above conditions have not been met by providing:
  - Incidences of non-compliance did not occur; and
  - Resolved incidences of non-compliance in a timely manner; and
  - Implemented specific measures to minimize hexavalent chromium emissions



# Hexavalent Chromium Phase-Out Plan

- Facilities that intends to phase hexavalent chromium out of their process can submit a Hexavalent Chromium Phase-out Plan to delay installation of add-on controls for a Tier II Tank
- Elements of the plan include:
  - Commitment that the facility will permanently eliminate or reduce hexavalent chromium to below the concentration of a Tier I Hexavalent Chromium-Containing Tank
  - Description of the method by which hexavalent chromium concentration will be permanently eliminated or reduced from the subject tank(s)
  - List of milestones necessary to reduce or eliminate hexavalent chromium by completion date
  - Completion date of each of the milestones
  - A list of all control measure that will be implemented for the subject tank(s) until the hexavalent chromium-concentration is eliminated or reduced
- Date of final completion not to exceed 2 years from approval of plan

# Post-Approval of Hexavalent Chromium Phase-Out Plan

- The owner or operator shall implement the approved plan and shall submit a monthly progress report to the Executive Officer by the 5<sup>th</sup> of each month indicating the progress of the previous month, or other schedule as specified in the approved plan
- If the owner or operator does not eliminate or reduce hexavalent chromium by the final completion date or the Executive Officer denies a Hexavalent Chromium Phase-Out Plan, the owner or operator shall
  - Submit complete application for add-on air pollution control device within 30 days of when the facility knew, or should have known, it could not meet the completion date
  - Install the add-on air pollution control device(s) no later than 180 days after a Permit to Construct is issued

# California Environmental Quality Act (CEQA)

- California State Law adopted 1970
- Purpose *[CEQA Guidelines Section 15002(a)]*
  - Inform governmental decision-makers and public about potential significant effects of projects
  - Identify ways to avoid or reduce adverse impacts
  - Require feasible alternatives and mitigation measures to prevent significant environmental damage
  - Disclose to the public why a project was approved

# California Environmental Quality Act (CEQA) (continued)

- Applies to projects undertaken by a Public Agency such as SCAQMD adoption of rules [CEQA Guidelines Section 15002(b)]
  - Required to comply with CEQA when approving a project [CEQA Guidelines Section 15002(d)]
  - Required for discretionary approvals [CEQA Guidelines Section 15002(i)]
- Lead Agency = SCAQMD
  - Oversight and legal responsibility for appropriate CEQA document preparation, circulation, response to comments, and approval/certification

# California Environmental Quality Act (CEQA) (continued)

- PAR 1469 is a project subject to CEQA
- Decision to prepare a 30-day Draft Environmental Assessment (EA)
  - ▶ EA equivalent to a Negative Declaration when no significant impacts identified
  - ▶ No CEQA scoping meeting is required to be held
  - ▶ Analysis of alternatives and mitigation measures not required
  - ▶ Will contain project description (Chapter 1) and environmental checklist (Chapter 2) evaluating project's impacts on 17 topic areas – evaluation in process
  - ▶ Will be released for a 30-day public review and comment in February 2018
- Final EA
  - ▶ Will include responses to Draft EA comment letters and any necessary modifications to Draft EA
  - ▶ Governing Board must certify Final EA



# Socioeconomic Impact Assessment

California Health & Safety Code (H&SC) Section 40440.8(a) require that a socioeconomic impact assessment be prepared for any proposed rule or rule amendment that "will significantly affect air quality or emissions limitations."

Socioeconomic impacts are defined as:

- Type of affected industries
- Impact on employment and the regional economy
- Range of probable costs, including those to industry
- Availability and cost effectiveness of alternatives to the rule
- Emission reduction potential
- Necessity of adopting, amending or repealing the rule in order to attain state and federal ambient air quality standards

# Socioeconomic Impact Assessment (continued)

H&SC Section 40728.5 additionally requires:

- SCAQMD's Governing Board to actively consider the socioeconomic impacts of regulations and make a good faith effort to minimize adverse socioeconomic impacts
- Socioeconomic analysis to include small business impacts
- Socioeconomic impact assessment is currently being prepared for PAR 1469
  - ▶ Based on the universe of 117 potentially affected facilities identified
  - ▶ Vast majority of affected facilities classified under the industry of Electroplating, Plating, Polishing, Anodizing, and Coloring (NAICS 332813)
  - ▶ Evaluating potential cost impacts of proposed amendments
  - ▶ Identifying small businesses based on PAR 1469 facility survey, proprietary Dun and Bradstreet data, and potentially benchmarking to Census Bureau's business data
  - ▶ Will be released for public review and comments no later than 30 days before the Public Hearing date

# Schedule

- Close of Public Comments – February 22, 2018
- Stationary Source Committee – February 16, 2018
- Set Hearing – March 2, 2018
- Public Hearing – April 6, 2018

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